Operating Instructions

Ex Plug Connector miniCLIX

> 8591/2

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2 General Information

2.1 Manufacturer

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2.2 Information regarding the Operating Instructions

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We reserve the right to make technical changes without notice.

2.3 Symbols Used

▶	A call to take action: Describes the actions to be carried out by the user.
▷	Reaction sign: Describes the results or the reactions to the actions taken.
✗	Checklist sign
☞	Commentary sign: Describes the notes and recommendations.
	Warning sign: Danger from energised parts!
	Warning sign: Danger due to an explosive atmosphere!

3 General Safety Information

3.1 Safety Instructions for Assembly and Operating Personnel

The operating instructions contain basic safety instructions which are to be observed during installation, operation and maintenance and servicing. Non-observance can lead to endangerment of persons, plant and the environment.

8591/2 plug connectors are suitable for use in hazardous areas in Zones 1 and 2 in accordance with EN standards as well as applications in the industrial sector.

⚠ WARNING
Risk due to unauthorised work being performed on the device! ▷ There is a risk of injury and damage to equipment. ▶ Mounting, installation, commissioning and servicing work must only be performed by personnel who are both authorised and suitably trained for this purpose.

Before mounting/operating:

- ▶ Read through the operating instructions.
- ▶ Give adequate training to the assembly and operating personnel.
- ▶ Ensure that the contents of the operating instructions are fully understood by the personnel in charge.
- ▶ The national installation and assembly regulations (e.g. IEC/EN 60079-14) apply.

When operating the device:

- ▶ The device may only be plugged in or out when subjected to a load of less than a maximum of 250 V AC and 10 A rated current. With higher rated values, the system must first be isolated from the mains voltage/current supply. With higher rated values, the system must first be isolated from the mains voltage /current supply.
- ▶ Ensure the operating instructions are made available on location at all times.
- ▶ Observe safety instructions.
- ▶ Observe national safety and accident prevention regulations.
- ▶ Servicing/maintenance work or repairs which are not described in the operating instructions must not be performed without prior agreement with the manufacturer.
- ▶ Any damage may render explosion protection null and void.
- ▶ No changes to the devices or components impairing their explosion protection are permitted.
- ▶ The device may only be fitted and used if it is in an undamaged, dry and clean state.
- ▶ The device may only be operated with the associated undamaged connector plugs and sockets.
- ▶ The plug connectors may also be used for intrinsically safe circuits in accordance with Ex ia/ib IIC T6. A corresponding marking shall be used if intrinsically safe circuits are used.
- ▶ Intrinsically safe and non-intrinsically safe circuits may not be used together in a common plug connector.
- ▶ Ensure that the plug/device plug is voltage free when the plug connection is disconnected.
- ▶ After disconnection, the coupler flange socket must be immediately closed off using the protective caps! When replacing the cap, make sure that it covers the connector correctly, otherwise the minimum protection level and the explosion protection cannot be guaranteed.

▶ Unused components should be stored with the protective cap screwed on.

If you have questions:
▶ Contact the manufacturer.

3.2 Warnings

Warnings are sub-divided in these operating instructions according to the following scheme:

⚠WARNING
The type and source of the danger! ▷ Possible consequences. ▶ Measures for avoiding the danger.

They are always identified by the signalling word “WARNING“ and sometimes also have a symbol which is specific to the danger involved.

3.3 Special conditions for safe use

⚠WARNING	
	Danger from energised parts! ▷ Risk of severe injuries. ▶ All connections and wiring must be disconnected from the power supply. ▶ Secure the connections against unauthorised activation.

Temperature class and type of protection

▶ Adhere to the temperature class and type of protection as specified on the device ratings plate.

Requirements of connection cabling:

▶ The plug-in connector's connection cable must be laid correctly and securely.
▶ Make sure they are sufficiently protected from mechanical damage.
▶ Select connection cabling that meets the thermal and mechanical requirements of the application area.
▶ The connection cable must be relieved of strain.

When connecting in hazardous areas:

▶ Use a terminal chamber which meets the requirements of a recognized type of protection in accordance with IEC/EN 60079-0, Section 1.2.

Metal versions of flanged socket, device plug and angled adaptor:

▶ Installation permitted in walls of enclosures designed with type of protection Flameproof Enclosure “d“ and Increased Safety “e“.

Plastic versions of flanged socket, device plug and angled adaptor:

- ▶ Installation permitted in walls of enclosures designed with type of protection Increased Safety “e“.
- ▶ Plastic versions of the device plug must be mechanically protected at temperatures under -20°C.
- ▶ Plastic angled adaptors are not to be used at temperatures under -20°C.

If using terminal chambers designed and certified in type of protection Increased Safety “e” as par IEC/EN 60079-7:

- ▶ Maintain the clearance and creepage distances in accordance with Section 4.3, Section 4.4 and Table 1.

Potential equalisation:

- ▶ Ensure potential equalisation, respectively earthing/grounding, via attachment of metal versions of the flanged socket, device plug and/or angled adaptor to the entire plant structure.

3.4 Conformity to Standards

The connectors have been developed, manufactured and tested in accordance with the state-of-art and EN 29001 (ISO 9001).

Among others, they comply with the following regulations and standards:

- ✗ IEC/EN 60079-0
- ✗ IEC/EN 60079-1
- ✗ IEC/EN 60079-7
- ✗ IEC/EN 60079-11
- ✗ IEC/EN 60079-14
- ✗ 94/9 EC
- ✗ 89/336/EEC „Electromagnetic Compatibility“

4 Designated Use

8591/2 plug connectors are suitable for use in hazardous areas in Zones 1 and 2 in accordance with EN standards as well as applications in the industrial sector

Ambient conditions

The connector's enclosure body, including the external metal components, are composed of high-quality materials that guarantee the corrosion protection and chemical resistance appropriate for applications in industrial atmospheres:

- ✗ Impact-resistant polyamide
- ✗ Nickel-plated brass
- ✗ Stainless steel AISI 316L

Usage

Application examples for 8591/2 plug connectors include:

- ✗ signal and data wiring,
- ✗ power supply to movable on-site controllers and
- ✗ power supply to movable electrical systems as well as to movable machines

in hazardous areas.

They are used as quick-action connectors of explosion-protected electrical apparatus in intrinsically safe (Ex) and industrial areas.

5 Technical Data

Explosion protection	
ATEX	⟨Ex⟩ II 2 G Ex de IIC T6
IECEx	Ex de IIC T6 or Ex ia/ib IIC T6
Certificates	
ATEX	PTB 07 ATEX 1028 X
IECEx	IECEx BKI 07.0001X
Rated values	
AC voltage	400 V
AC voltage (IECEx)	250 V
AC current	16 A*
Frequency	400 Hz
DC voltage	60 V
DC current	10 A
	* Connection and disconnection on-load operation up to max. 250 V / 10 A permitted (acc. to IEC/EN 60079-0)
Switching capacity	230 V / 400 V max. 10 A
Fuse capacity	
without thermal protection	16 A
with thermal protection	20 A gL
Enclosure material	brass, nickel-plated; plastic, polyamide resin; stainless steel AISI 316L
Connectors	Coupler / Plug crimp 1.5 mm² *) — 0.75 mm² ... 1.5 mm² crimp 2.5 mm² *) — 2.5 mm² spring clamp — 0.34 mm² ... 1 mm² (flexible with wire-end sleeve) 0.34 mm² ... 1 mm² (solid) Flange socket / Device plug crimp 1.5 mm² *) — 0.75 mm² ... 1.5 mm² crimp 2.5 mm² *) — 2.5 mm² Flange socket / Device plug made of metal with leads (approx 30 cm) — 0.75 mm²; 1.5 mm²; 2.5 mm² *) only with special crimping tool, see accessories; alternative: soldering 0.34 mm² ... 1 mm² (with heat shrink tubing)
Cable entries	8591/2..-..-...1 ∅ 7 mm ... 11 mm 8591/2..-..-...2 ∅ 11 mm ... 15 mm Version for amoured cables ∅ 16 mm ... 26 mm
Mounting	Flange socket / device plug simply scew into existing openings and wire - plastic version: M 25 x 1.5 - metal version: M 25 x 1.5 respc. 3/4“ NPT
Type of protection	IP 66 / IP 68 (2 m water column, 1 hour) acc. to IEC/EN 60529 (with protective caps closed and secured as well as properly fitted and secured components)
Safety class	I - fulfilled by metal versions II - fulfilled by plastic versions
Ambient temperature	- 20 °C ... + 40 °C (Plastic) - 55 °C ... + 40 °C (Metal) - 55 °C ... + 75 °C (Metal max. 1 A)
Storage temperature	- 55 °C ... + 80 °C

Tightening torque

	Plastic	Metal (Ex e)	Metal (Ex d)
Screw-in treads (M 25)			
angled adaptor	2.5 Nm	2.5 Nm	3.5 Nm
flanged socket	2.5 Nm	2.5 Nm	3.5 Nm
device plug	2.5 Nm	2.5 Nm	3.5 Nm
Coupling ring	2.5 Nm	2.5 Nm	2.5 Nm
Protective cap	2.5 Nm	2.5 Nm	2.5 Nm
Pressure screw with strain relief	4.0 Nm	4.0 Nm	4.0 Nm
outer pressure screw for armoured cables	2.5 Nm	2.5 Nm	2.5 Nm
inner pressure screw for armoured cables	2.5 Nm	2.5 Nm	2.5 Nm
Lock-screws	1.0 Nm	1.0 Nm	- -

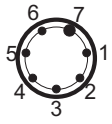
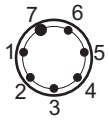
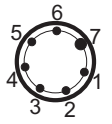
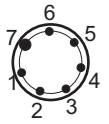
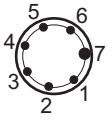
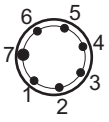
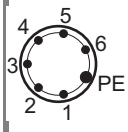
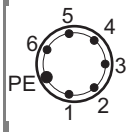
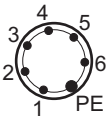
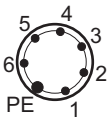
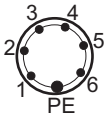
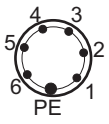
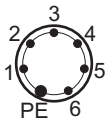
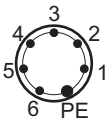
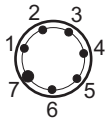
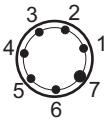
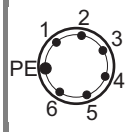
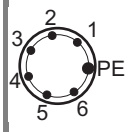
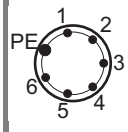
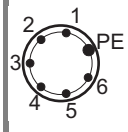
Weight

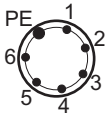
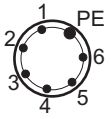
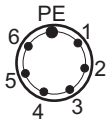
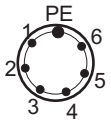
		Plastic	Metal	Metal - armoured version
Coupler [1]	8591/.3.-..-....	approx 97 g	approx 205 g	approx 420 g
Plug	8591/.7.-..-....	approx 92 g	approx 244 g	approx 420 g
Flange socket [1]	8591/.8.-..-....	approx 64 g	approx 210 g	- -
Device plug [1]	8591/.9.-..-....	approx 75 g	approx 260 g	- -
Device plug > 2 l [1]		- -	- -	approx 330 g
Angled adaptor	8591/11.-..-....	approx 40 g	approx 191 g	- -
Protective cap:				
for plug / device plug		approx 10 g	approx 44 g	
for coupler / flange socket		approx 13 g	approx 80 g	

[1] Weight including plastic protective cap

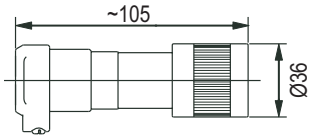
☞	Additional technical data for layout and designs: see the data sheet

Proposed coding of connectors
Turn down nose/notch (6 h)
All other codings result out of this position

Voltage	Number of pins	Coding	Coupler / Flange socket	Plug / Device plug	Proposed colour coding
Special time	7 P	1 h	 05005E00	 05056E00	without
Special time	7 P	2 h	 05014E00	 05057E00	green
Special time	7 P	3 h	 05027E00	 05058E00	without
110 V ... 130 V AC	6 P + ⏚	4 h	 05028E00	 05061E00	yellow
Special time	6 P + ⏚	5 h	 05033E00	 05110E00	green / red
230 V ... 250 V AC	6 P + ⏚	6 h	 05035E00	 05113E00	red
Special time	6 P + ⏚	7 h	 05043E00	 05116E00	without
24 V DC	7 P	8 h	 05045E00	 05121E00	grey
Special time	6 P + ⏚	9 h	 05050E00	 05122E00	without
400 V AC	6 P + ⏚	10 h	 05052E00	 05123E00	blue

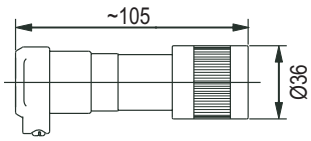
Special time	6 P + ⏚	11 h	 05053E00	 05125E00	without
24 V AC	6 P + ⏚	12 h	 05055E00	 05126E00	without ring

Dimension drawings (all dimensions in mm) - subject to alterations



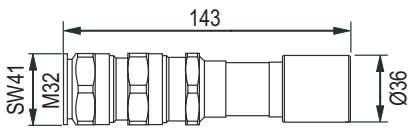
05130E00

8591/.7.-..-0.0. Plug
(plastic)



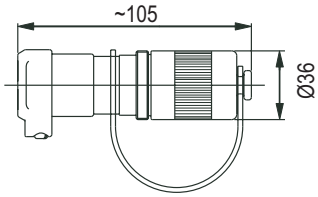
05131E00

8591/.7.-..-..0. Plug
(metal)



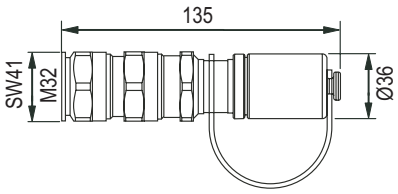
05129E00

8591/.7.-..-..01 Plug for armoured cables
(metall)



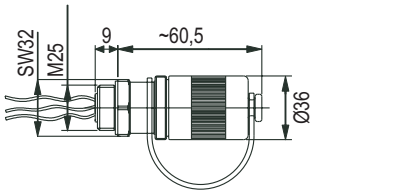
05132E00

8591/.3.-..-..0. Coupler
(plastic, metal)



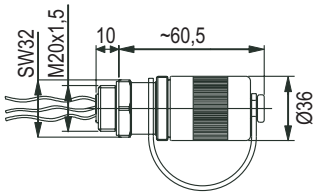
05128E00

8591/.3.-..-..01 Coupler for armoured cables
(metal)



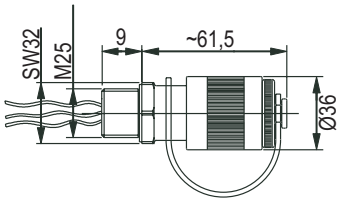
05135E00

8591/.8.-..-0.01 Flange socket
(plastic)



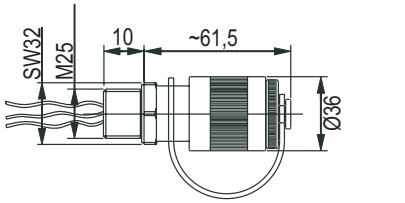
05133E00

8591/.8.-..-..01 Flange socket
(metal)



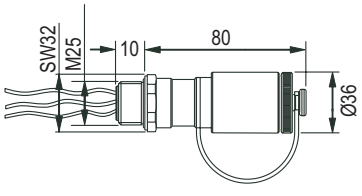
05134E00

8591/.9.-..-0.01 Device plug
(plastic)



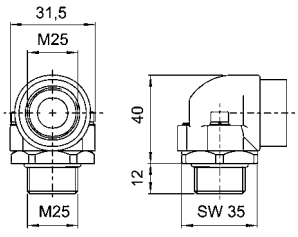
05137E00

8591/.9.-..-..01 Device plug for Ex d enclosure with volumen < 2 l
(metal)



05136E00

8591/.6.-..-..01 Device plug for Ex d enclosure with volume > 2 l
(metal)



05127E00

8591/11.-..-0.01 Angled adaptor
(plastic/metal)

6 Transport, Storage and Disposal

Transport

▶ Shock-free in its original carton, do not drop, handle carefully.

Storage

▶ Store in a dry place in its original packaging.
▶ Storage temperature range: - 55 °C ... + 80 °C

Disposal

▶ Ensure environmentally friendly disposal of all components according to legal regulations.

7 Installation

⚠WARNING	
	Danger from energised parts! ▷ Risk of severe injuries. ▶ All connections and wiring must be disconnected from the power supply. ▶ Secure the connections against unauthorised activation.

⚠WARNING	
	Incorrectly mounted components! ▷ Explosion protection cannot be guaranteed any more if the components are incorrectly mounted. ▶ Carry out the mounting in strict accordance with the instructions and national safety and accident prevention regulations (e.g. IEC/EN 60079-14).

☞	R. STAHL supplies the miniCLIX plug connectors on request with prefabricated leads. Please contact your local sales representative for more information.

☞	Excessive tightening of the locking screw can negatively affect the strain relief/ sealing.

☞	If possible, plug connectors and flange sockets should be installed so that the plug opening is oriented downward.

☞	To ensure correct functionality of the plug, non-used pins should also be fitted.

Before installation, verify the following:

▶ Isolate all connections and cabling from the mains power supply and secure against being switched ON inadvertently.
▶ Opening and threaded apertures are checked for intactness and cleanliness.
▶ Threads and threaded opening correspond to each other.
▶ Seal ring is checked for correct positioning and intactness.

Before fitting of flange sockets, device plugs and angled adaptors in flameproof enclosures, verify the following:

- Isolate all connections and cabling from the mains power supply and secure against being switched ON inadvertently.
- Threaded openings in the flameproof protective enclosure must meet the minimum requirements of IEC/EN 60079-1, Section 5.3, Table 3.
- Flange sockets, device plugs and angled adaptors as well as the corresponding openings and threaded apertures are to be checked for intactness and cleanliness.
- Threads and threaded opening correspond to each other.
- Seal ring is checked for correct positioning and intactness.

7.1 Tested cable types

As of this writing; the cable types tested for usage with Ex-d connectors as per IEC/EN 60079-0, Annex B3 are:

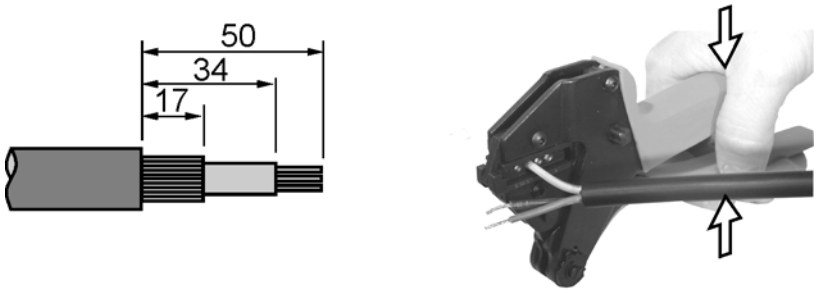
Type of cable	∅ in mm
Ölflex classic 100 5G2,5	11,9
Ölflex classic 110 7G1,5	8,8
Ölflex classic 400 5G2,5	10,0
H05 V2V2-F 5G1,5	9,9
H05 V2V2-F 5G2,5	12,0
H05-RR-F 5G1,5	10,2
Y-JZ 07 x 1,5	8,8
NYM 7 x 1,5	10,5
NYM 5 x 2,5	12,1
NYY 5G1,5	11,1
NYY 5G2,5	13,3
LiYCY 5 x 0,75	7,5
ELSPRO-FLEX THERM 3x1,5	9,1

7.2 Crimp connection

⚠ WARNING
Damage to the crimped contacts! ▷ Using an unsuitable crimping tool can damage the crimped contacts. ▶ Use only the original R. STAHL crimping tool (see accessories).

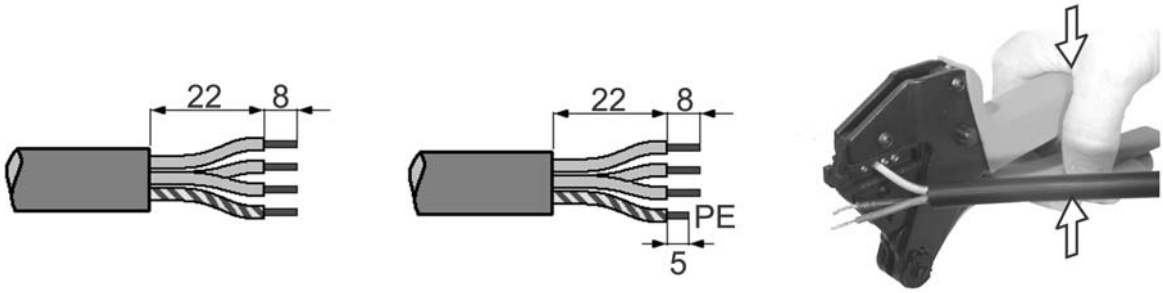
☞	The insulation of the wires connected must extend all the way to the plug pins or the pin socket sleeves. The conductor itself may not be damaged.

Armoured cable:



11364E00

All other types

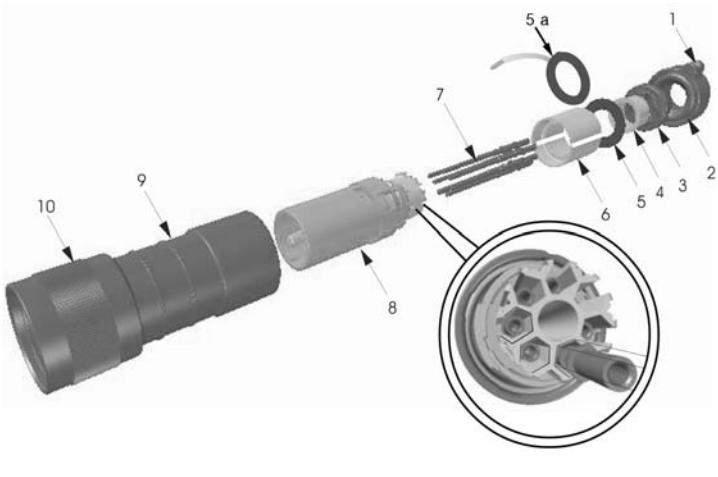


11363E00

(Fig.: left without PE bracket; right: with PE bracket)

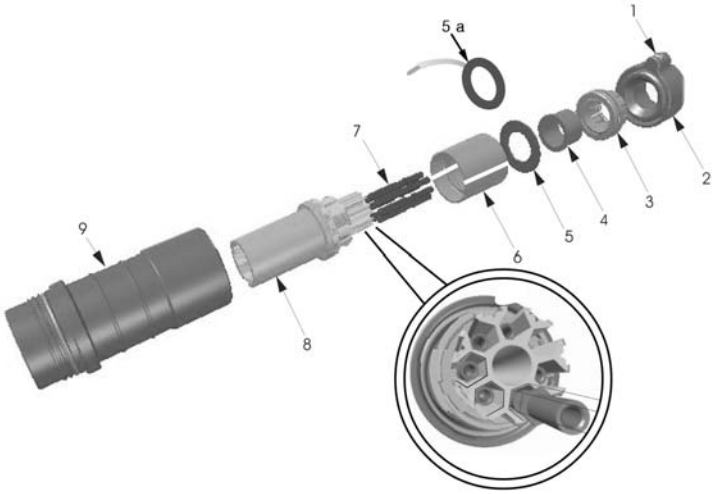
- ▶ Strip the insulation as depicted in the drawing.
- ▶ Insert the stripped wires into the plug pins or pin socket sleeves and crimp using the crimping tool as shown in the graphic.

7.3 Plug/coupler (Ex-e) - Plastic/Metal with crimp connection



05158E00

Fig.: Plug

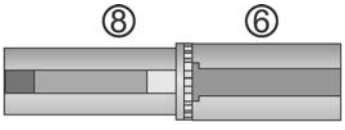


05154E00

Fig.: Coupler

☞	Before installation, make sure that you have the correct plug/coupler version in regards to the cable cross-section! Possible versions: ✗ Cable cross-section 7 mm ... 11mm ✗ Cable cross-section 11 mm ... 15 mm

- ▶ Loosen the locking screw (1).
- ▶ Screw off the pressure fitting (2).
- ▶ Press individual components 3 - 8 forward and out through the sleeve (9).
- ▶ Insert the stripped wire in connection opening of the plug pins / socket sleeves (7) and fasten with the crimping tool.
- ▶ Optionally, the pins / socket sleeves can also be soldered.
  Use shrink tubing to protect the soldered locations.
- ▶ Push the pressure fitting (2) and cable strain-relief (3) onto the connecting cable.
- ▶ Push the seal (4)onto the connecting cable and guide it into the cable strain-relief (3).
- ▶ Push the pressure washer (5) and insulating sleeve (6) onto the connecting cable.

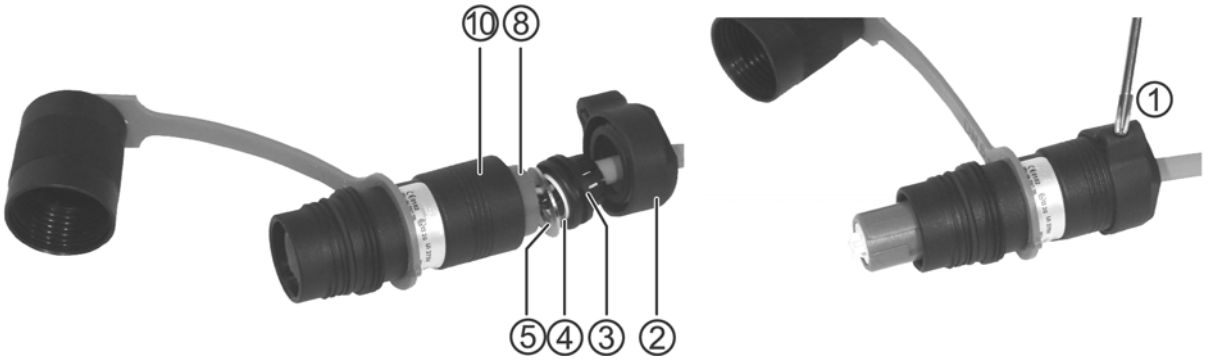
☞	Take care that the insulation sleeve (6) is correctly oriented. A subsequent correction is difficult.	

▶ Guide the plug pins (7) from behind into the plug insert (8) until the stop is reached. The hexagonal edges of the plug pins must be correctly aligned so as to fit in the plug insert (8). While doing this, first guide in the thick plug pin (hole No. 7).

☞	After the plug pins are guided into the plug insert, the pins can not be disassembled again.

▶ Push the insulating sleeve (6) onto the plug insert (8).

⚠ WARNING
Cross-threading can damage the threads! ▶ Align components before tightening.



11374E00

▶ Push the pressure washer (5), the seal (4), the strain-relief (3) and pressure fitting (2) onto the insulating sleeve (6).
▶ Correctly guide the plug insert (8) in the plug enclosure (10). Groove and lug must match.
▶ Push the union nut from the opposite side to it makes contact.
▶ Screw the pressure fitting (2) onto the plug sleeve and secure with the locking screw (1).

06226E00

7.4 Device plug/flange socket (Ex-e) - Plastic with crimp connection

⚠ WARNING
Limited area of application! ▶ The device plug is only to be used in enclosures designed for type of protection Ex-e.

☞	After the plug pins are guided into the plug insert, the pins can not be disassembled again.

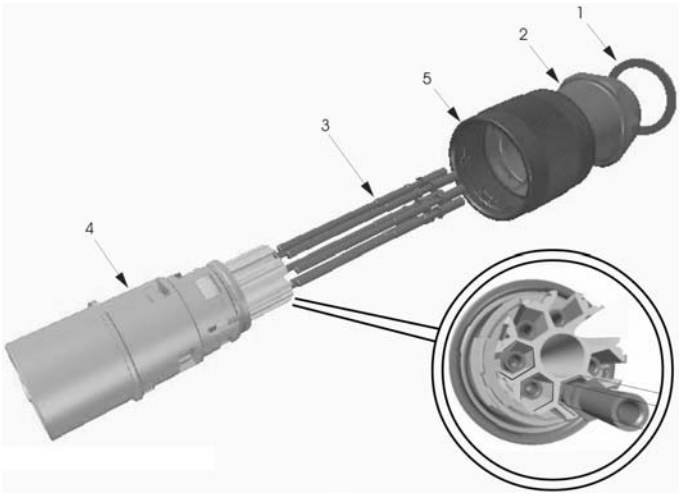


Fig.: Device plug

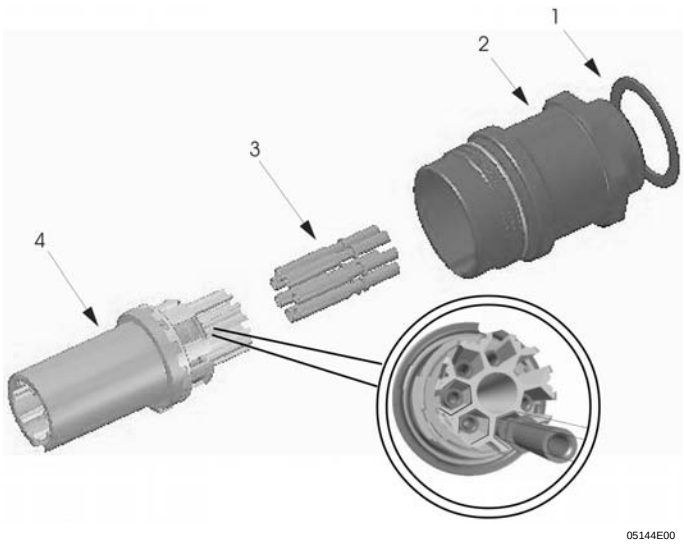


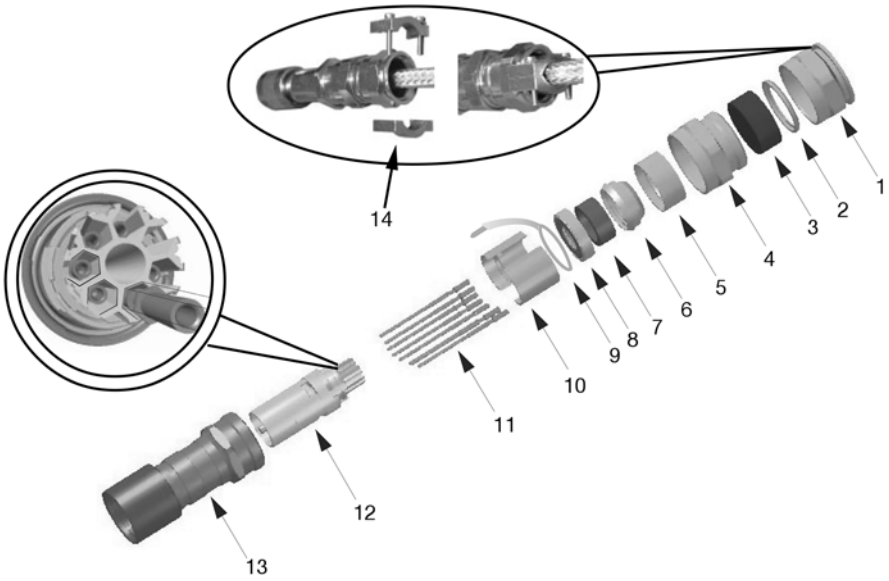
Fig.: Flanged socket

- ▶ Slide the device plug insert (4) forward and out through the plug sleeve (2).
- ▶ Insert the stripped wire in connection opening of the plug pins (3) and fasten with the crimping tool.
- ▶ Optionally, the pin connections can also be soldered.
  Use shrink tubing to protect the soldered locations.
- ▶ Guide the plug pins (3) from behind into the plug insert (4) until the stop is reached. The hexagonal edges of the plug pins must be correctly aligned so as to fit in the plug insert (1).

▶ Insert the entire device plug insert (4) with the connecting cable through the front on the device plug (2) sleeve until it audibly latches into position.

☞	After latching; disassembly is no longer possible.

7.5 Plug/coupler (Ex-e) for armoured cable - metal

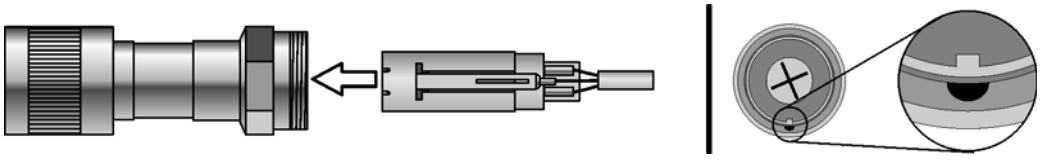


05156E00

- ▶ Unscrew the gland (1) and remove together with parts 2 - 8 of the plug and coupler sleeve (13).
- ▶ Remove the protective membranes from seals (3) and (7).
- ▶ Push the plug insert (12) and insulating sleeve (10) forward and out through the plug sleeve (13).
- ▶ Insert the stripped wire in connecting opening of the plug pins (11) and fasten with the crimping tool.
- ▶ Optionally, the pin connections can also be soldered.
  Use shrink tubing to protect the soldered locations.
- ▶ After crimping/soldering, push the screw-on parts 1 -8 and insulating sleeve onto the connecting cable.

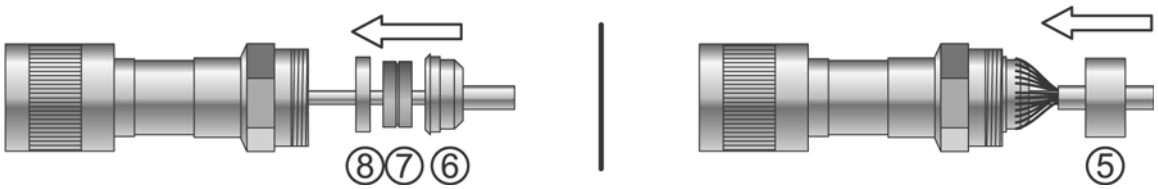
☞	After the plug pins are guided into the plug insert, the pins can not be disassembled again.

- ▶ Guide the plug pins (11) from behind into the plug insert (12) until the stop is reached. The hexagonal edges of the plug pins must be correctly aligned so as to fit in the plug insert (12).
- ▷ Insert the plug pins until they audibly latch into position.
- ▶ In the correct position from behind, insert the plug insert (12) together with the insulating sleeve (10) into the plug sleeve (13).



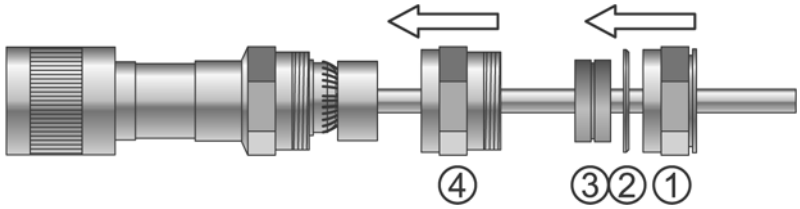
11382E00

During the following assembly steps, care take that the components are correctly oriented:



11384E00

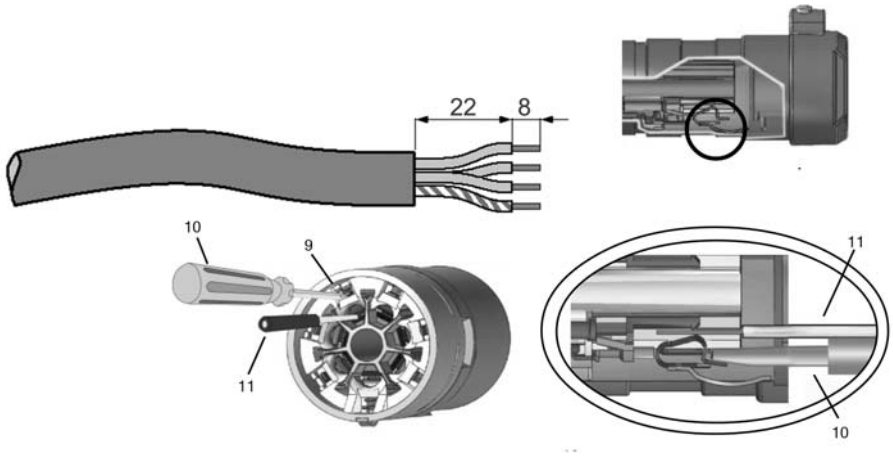
- ▶ Insert the pressure washer (8), the seal (7) and clamping cone (6) in the plug sleeve (13).
- ▶ Place screen wire shielding over the clamping cone (6).
- ▶ Push the sleeve (5) over the screen wire shielding.



11385E00

- ▶ Screw the inner gland nut (4) onto the plug sleeve.
- ▷ The sleeve clamps the screen wire shielding onto the clamping cone.
- ▷ The seal clamps the inner jacket of the connecting cable.
- ▶ Place the thrust ring (3) and seal (2) against the gland nut (1).
- ▶ Make sure that the seal sits correctly.
- ▶ Screw the gland nut (1) onto the inner gland nut (4) using the corresponding tightening torque (see technical data).

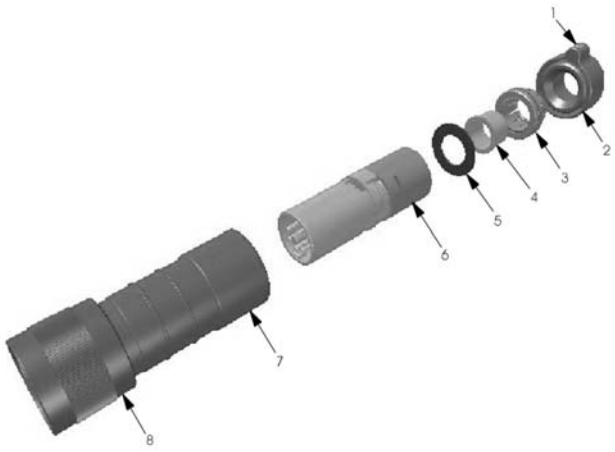
7.6 Plug/coupler (Ex-e) - Plastic/Metal with cage clamp terminal



05148E00

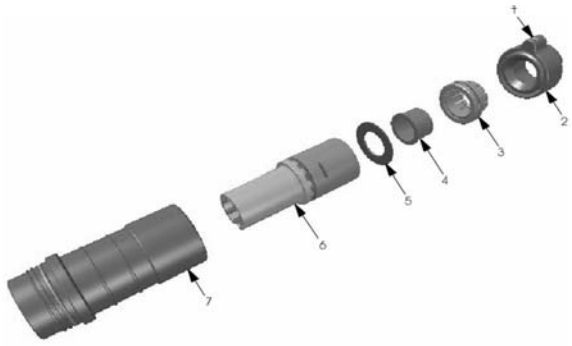
- ▶ Strip the insulation as descripted in the drawing.
- ▶ Open the cage clamp terminal (9) using an appropriate tool (10) (e.g. screwdriver 2.5 x 75).
- ▶ Insert the connection wires (11).
- ▶ Pull the tool out.
- ▷ In so doing, the cage clamp spring will press against the connection wire.
- ▷ Electrical contact is hereby established with the connection wire and plug pin.
- ▶ Disconnection of the plug connection proceeds by reversing the order.

Fig.: Plug



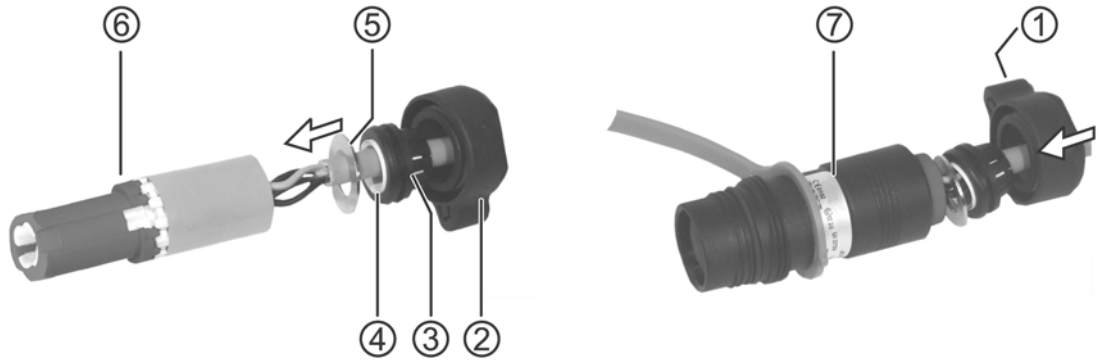
05172E00

Fig.: Coupler



05155E00

- ▶ Loosen the locking screw (1).
- ▶ Screw the pressure fitting (2) out of the plug/coupler sleeve (7).
- ▶ Screw out the individual parts 3 -6.
- ▶ Guide the stripped wire through the pressure fitting, the strain-relief (3), the seal ring (4) and the pressure washer/shield (5).
- ▶ Connect the connection cable as described above.



11389E00

- ▶ Correctly align and insert the plug insert (6) into the plug/coupler sleeve (7).
- ▶ Insert the pressure washer/shield (5), the seal ring (4) and the strain-relief (3) in the plug sleeve (7).

⚠ WARNING
Cross-threading can damage the threads! ▶ Align components before tightening.

- ▶ Screw on the pressure fitting and then secure it in place using the locking screw (1).

7.7 Direct connection of individual wires for metal versions of device plugs/ flange sockets

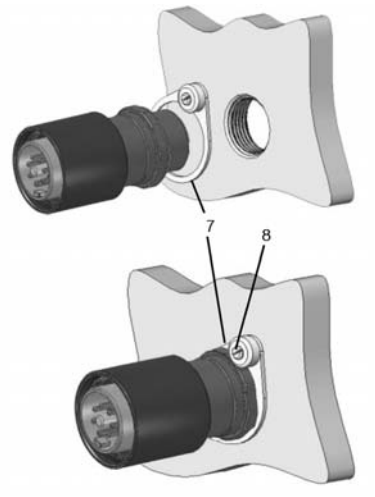
⚠WARNING
Prevent accidental unscrewing of components! ▶ Components must be secured to prevent unintentional turning or self-loosening by taking appropriate measures (e.g. anti-rotation guard, see accessories).

⚠WARNING
Risk of damage to the wires! ▷ Careless screwing can damage the wires and their insulation. ▶ Tighten components together carefully.

☞	To ensure explosion protection, exclusively use device plugs and flange sockets made of metal in the drill holes of the flameproof enclosures.

☞	Tightening torque: see data sheet or chapter “Technical data“ in these operating instructions.

- ▶ Together with the anti-rotation guard (7) screw the flange socket or device plug in the enclosure (bore thread M25; wrench size SW32).
- ▶ Secure the device plug or flange socket against unintentional turning by screwing in the locking screw (8).



05147E00

7.8 Locking mechanism

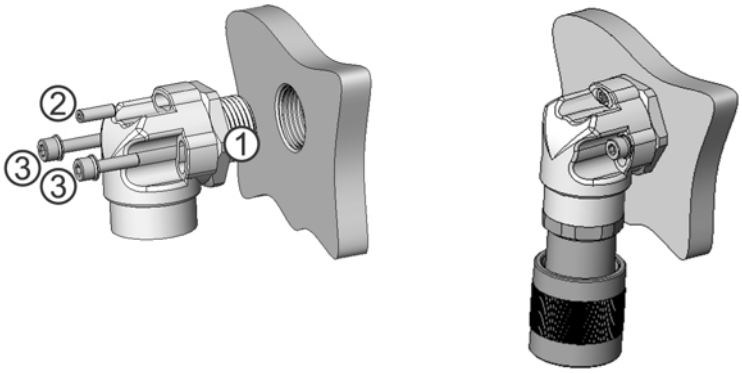
11392E00

The plug connection can be ordered with an optional locking mechanism. It can then be padlock-safeguarded when not plugged in (hasp diameter: 3 ... 6 mm).

☞	The union nut must be unscrewed before the connection can be separated.

☞	The locking mechanism can not be retrofitted!

7.9 Rotating the angled adaptor



11392E00

The position of an already screwed-in angled adaptor can be changed without having to screw out the threaded support base (1).

- ▶ Screw out the anti-rotation guard (2).
- ▶ Remove the screws (3).
- ▶ Rotate the angled adaptor to the desired position.
- ▶ Screw the screws (3) in the visibly matching threaded holes.
- ▶ Screw in the anti-rotation guard (2).

8 Commissioning

8.1 Before commissioning

- ▶ Subject the apparatus to the individual certification tests by the relevant national testing authority.
- ▶ Test the components for correct operation and installation in accordance with the operating instructions and other applicable specifications.
- ▶ Ensure that the same earth potential is present throughout the system.
- ▶ Check that cables and lines are clamped properly.
- ▶ Inspect enclosure for damage.
- ▶ Inspect enclosure for foreign bodies.
- ▶ Observe nominal voltage.

8.2 Connecting / disconnecting the plug connection

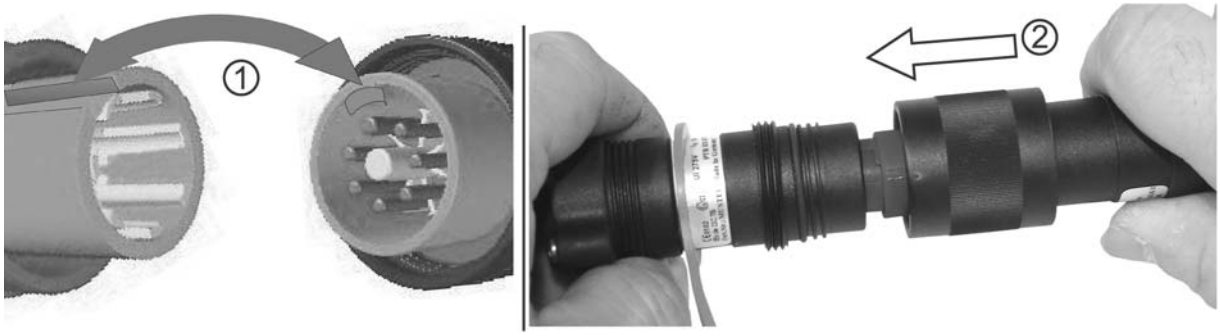
⚠ WARNING
Incorrectly connected plug and socket! ▷ Explosion protection cannot be guaranteed any more if the plug and socket are incorrectly connected. ▶ Proceed in strict accordance with the instructions.

⚠ WARNING
Risk of damage to the plug socket! ▶ Components to be connected must have the same coding.

⚠WARNING	
	Danger from energised parts! ▶ All connections and wiring must be disconnected from the power supply and secured against unauthorised activation.

⚠WARNING	
	Danger from energised parts! ▶ After disconnecting, the energised plug and socket connection components must be immediately closed off using the protective caps!

▶ Check for damage before the plug is inserted into the socket.



06239E00

▶ Make sure the plug with its guide nose is oriented correctly while plugging into the corresponding guide groove (1).
▶ Insert until the plug encounters the first end-stop (2).

11394E00

▶ Rotate the connector plug/coupler by about 30° to the right until you reach the second stop.
▶ Fully insert the plug into the socket.
▶ Screw on the coupling ring/union nut.
▷ The mechanical connection as well as the IP protection are now established.
▶ Disconnection of the plug connection proceeds by reversing the order.

9 Maintenance and Servicing

⚠ WARNUNG
Danger from energised parts! ▷ Explosion protection is not guaranteed any longer. ▶ Before disconnection of the plug connection, ensure that the plug/device plug is voltage free after disconnection. ▶ After disconnection, the couplers/flange socket must be immediately closed off using the protective caps!

⚠ WARNING
Short circuit in the circuit ▷ After multiple short circuits, the flameproof encapsulation is no longer guaranteed. ▶ After a short circuit, check the functionality of the plug connection. ▶ Replace the entire plug connector if needed.

⚠ WARNING
Gap limiting surfaces! ▶ Gap limiting surfaces are neither to be reworked nor lacquered after purchase of the device.

9.1 Regular Maintenance Work

▶ Consult the relevant regulations (e.g. IEC/EN 60079-17) to determine the type and extent of inspections.
▶ The length of time between periodic checks shall be so set that any system faults likely to arise are found promptly.

To check as part of the maintenance schedule:

✗ Check that cables and lines are clamped properly.
✗ Inspect device for visible damage.
✗ Compliance with the permitted temperatures in accordance with IEC/EN 60079-0.
✗ Make sure the device is used according to its designated use

9.2 Repair work

▶ Repairs that may affect the explosion protection are only to be performed by the manufacturer.
▶ No changes to the apparatus are permitted.
▶ Maintenance work and repairs may only be performed using original replacement parts supplied by the manufacturer.

In case of damage to the plug pins:

▶ Replace the apparatus. Disassembly cannot be performed, therefore repair is not possible.

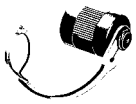
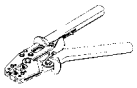
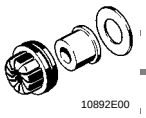
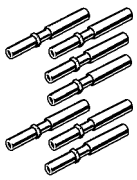
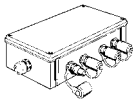
In case of damage to the flameproof enclosure:

▶ The device must be returned to the manufacturer for repair.

9.3 Cleaning

✗ Clean with a cloth, brush, vacuum cleaner or similar items.
✗ When cleaning with a damp cloth, use water or mild, non-abrasive, non-scratching cleaning agents.
✗ Never use aggressive cleaning agents or solvents.

10 Accessories and Spare Parts

Designation	Illustration	Description	Order number
Angled adaptor	10212E00	plastic	8591801440
Angled adaptor	10213E00	brass, nickel-plated	8591802440
Protective cap for coupler, flange socket	 10211E00	plastic (polyamide resin)	8591801140
		brass, nickel-plated	8591803140
Protective cap for plug, device plug	10210E00	plastic (polyamide resin)	8591802140
		brass, nickel-plated	8591804140
Crimping tool	 10198E00	up to 4 mm^2, for all versions with crimp connectors	4618990
Twist protection	10891E00	for flange socket and device plug	8591809290
Strain relief	 10892E00	with gasket and plate ∅ 7 mm ... 11 mm	8591805290
			8591807290
		with gasket and plate ∅ 11 mm ... 15 mm	8591806290
			8591808290
Male connectors	05643E00	7 x 1,5 mm^2 for plug	8591802640
		7 x 2,5 mm^2 for plug	8591804640
		7 x 1,5 mm^2 for plug (incl. PE connection, PE longer)	8591801640
		7 x 2,5 mm^2 for plug (incl. PE connection, PE longer)	8591803640
Female connectors	 05641E00	7 x 1,5 mm^2 for coupler or flange socket	8591801500
		7 x 2,5 mm^2 for coupler or flange socket	8591802500
Distribution box	 10261E00	with 1, 2, 4 or 6 branches (flange socket: plastic or metal) in plastic or metal	

11 EC-Type Examination Certificate (Page 1)

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

(1) **EC-TYPE-EXAMINATION CERTIFICATE**

(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

PTB 07 ATEX 1028 X

(4) Equipment: Plug connector, type 8591/2..-.....

(5) Manufacturer: R. STAHL Schaltgeräte GmbH

(6) Address: 74638 Waldenburg(Württ), Germany

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 07-17174.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2004 EN 60079-1:2004 EN 60079-7:2003

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

II 2 G Ex de IIC T6

Zertifizierungsstelle Explosionsschutz Braunschweig, June 7, 2007

By order:

Dipl.-[illegible]

sheet 1/4

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.
In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

EG-Konformitätserklärung
EC Declaration of Conformity
Déclaration de Conformité CE

R. STAHL Schaltgeräte GmbH • Am Bahnhof 30 • 74638 Waldenburg, Germany
erklärt in alleiniger Verantwortung, *declares in its sole responsibility, déclare sous sa seule responsabilité,*

dass das Produkt *that the product* *que le produit*	Steckvorrichtung *Plug and Socket System* *Fiche et prise*
Typ, *type, type:*	**8591/2.-...**
Kennzeichnung, *marking, marquage:*	Ⓔx **II 2G Ex d e IIC T6** **CE0158**
mit der EG-Baumusterprüfbescheinigung: *under EC Type Examination Certificate:* *avec Attestation d'examen CE de type:*	**PTB 07 ATEX 1028 X** **(Physikalisch-Technische Bundesanstalt** **Bundesallee 100, 38116 Braunschweig)**

auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt
which is the subject of this declaration, is in conformity with the following standards or normative documents
auquel cette déclaration se rapporte, est conforme aux normes ou aux documents normatifs suivants

Bestimmungen der Richtlinie *Terms of the directive* *Prescription de la directive*	**Nummer sowie Ausgabedatum der Norm** *Number and date of issue of the standard* *Numéro ainsi que date d'émission de la norme*
94/9/EG: ATEX-Richtlinie *94/9/EC: ATEX Directive* *94/9/CE: Directive ATEX*	EN 60079-0:2006 EN 60079-1:2007 EN 60079-7:2007
Produktnormen nach Niederspannungsrichtlinie: *Product standards according to Low Voltage Directive:* *Normes des produit pour la Directive Basse Tension:*	EN 60529:2000 EN 60999-1:2000 EN 60947-1:2008

Waldenburg, 11.11.2011

Ort und Datum
Place and date
Lieu et date

i.V.

J.-P. Rückgauer
Leiter Entwicklung und Technik
Director Development and Technology
Directeur Développement et Technique

i.V.

Dr. S. Jung
Leiter Qualitätsmanagement
Director Quality Management
Directeur Assurance de Qualité